CLAIMS

What is claimed is:

1   1.   A method for speculatively reading data from a secondary storage device, the method

2   comprising:

3   reading a first datum from a secondary storage device, the secondary storage device being

4   capable of storing data on a storage medium;

5   determining a probability of the secondary storage device receiving a read request for a

6   second datum stored on the storage medium, the second datum being logically related to the first

7   datum;

8   if the probability is above a pre-determined probability value, then determining a cost to

9   speculatively read the second datum, the cost being based on a position of a read/write head,

10   relative to the second datum's physical location on the fixed medium, when the read/write head is

11   reading the first datum;

12   if the cost to speculatively read the second datum is below a pre-determined cost value,

13   then reading the second datum without a request being received from outside the secondary

14   storage device for the second datum;

15   storing the second datum in a secondary storage device cache; and

16   producing the second datum from the secondary storage device cache if the secondary

17   storage device receives a later request for the second datum.

1   2.   The method of claim 1, wherein the secondary storage device is a hard disk drive.

1   3.   The method of claim 2, wherein the storage medium is a magnetic disk.

1   4.   The method of claim 1, wherein the storage medium is an optical disk.

1   5.   The method of claim 1, wherein the probability of the secondary storage device receiving

2   the request for the second datum is determined by a history of the second datum being requested

3   when the first datum is requested.

1   6.   The method of claim 1, wherein the probability of the secondary storage device receiving

2   the request for the second datum is determined by a physical proximity of the first and second

3   datum on the storage medium.

1   7.   The method of claim 1, wherein the cost to speculatively read the second datum is

2   determined by the first and second datum being on a same track on the storage medium.

1   8.   The method of claim 1, wherein the probability of the secondary storage device receiving

2   the request for the second datum is determined by the first and second datum being of a same

3   format.

1   9.   The method of claim 1, wherein the first and second datum are on different disk surfaces

2   associated with a first read/write head and a second read/write head respectively, and wherein the

3   cost to speculatively read the second datum is determined by the second read/write head being

4   near the physical location of the second datum when the first read/write head is near the physical

5   location of the first datum.

1   10.   A computer program product, residing on a computer usable medium, for speculatively

2   reading data from a secondary storage device, the computer program product comprising:

3   program code for reading a first datum from a secondary storage device, the secondary

4   storage device being capable of storing data on a storage medium;

5   program code for determining a probability of the secondary storage device receiving a

6   read request for a second datum stored on the storage medium, the second datum being logically

7   related to the first datum;

8   program code for, if the probability is above a pre-determined probability value, then

9   determining a cost to speculatively read the second datum, the cost being based on a position of a

10 read/write head, relative to the second datum's physical location on the fixed medium, when the

11 read/write head is reading the first datum;

12   program code for, if the cost to speculatively read the second datum is below a pre-
13   determined cost value, then reading the second datum without a request being received from
14   outside the secondary storage device for the second datum;

15   program code for storing the second datum in a secondary storage device cache; and

16   program code for producing the second datum from the secondary storage device cache if
17   the secondary storage device receives a later request for the second datum.

1   11.   The computer program product of claim 10; wherein the secondary storage device is a
2   hard disk drive.

1   12.   The computer program product of claim 10, wherein the storage medium is a magnetic
2   disk.

1   13.   The computer program product of claim 10, wherein the storage medium is an optical
2   disk.

1   14.   The computer program product of claim 10, wherein the probability of the secondary
2   storage device receiving the request for the second datum is determined by a history of the
3   second datum being requested when the first datum is requested.

1   15.   The computer program product of claim 10, wherein the probability of the secondary
2   storage device receiving the request for the second datum is determined by a physical proximity
3   of the first and second datum on the storage medium.

1   16.   The computer program product of claim 10, wherein the cost to speculatively read the
2   second datum is determined by the first and second datum being on a same track on the storage
3   medium.

1   17.   The computer program product of claim 10, wherein the cost to speculatively read the
2   second datum is determined by the first and second datum being on a same track on the storage
3   medium.

1   18.   The computer program product of claim 10, wherein the first and second datum are on
2   different disk surfaces associated with a first read/write head and a second read/write head
3   respectively, and wherein the cost to speculatively read the second datum is determined by the
4   second read/write head being near the physical location of the second datum when the first
5   read/write head is near the physical location of the first datum.